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## EXPANSION OF GOLF COURSES IN THE UNITED STATES\*

DARRELL E. NAPTON and CHRISTOPHER R. LAINGEN

**ABSTRACT.** Twenty-five million Americans play golf on the nation's 16,000 courses each year. These golf courses constitute a significant national landscape feature. Since 1878, when the game arrived in the United States, golf has filtered down the urban, economic, and social hierarchies to become accepted by and accessible to most Americans. During the ensuing thirteen decades the number, location, and layout of the nation's golf courses have responded to many of the same driving forces that impacted the nation, including decentralization, growth of the middle class, war, economic depression, suburbanization, and the increasing role of the federal government. Four epochs of golf-course growth and diffusion show the growing acceptance of the sport and depict where courses were most likely to be constructed as a result of the prevailing forces of each epoch. *Keywords:* *diffusion, driving forces, golf, land use, recreation.*

Few sports leave an imprint on the land as large or distinctive as golf. Golf courses are highly visible from the air and are easily distinguishable in remotely sensed satellite imagery because of their large size, distinctive patterns, and normally bright green, irrigated grasslands. Golf is the eleventh most popular sport in the United States, and during the last quarter of the twentieth century the number of golfers increased four times faster than the nation's population, from 10 million to more than 25 million. These golfers played nearly 600 million rounds annually (U.S. Census Bureau 2002).

Golf courses are an important national land use. The nation's 16,000 golf courses occupy an area as large as the states of Delaware and Rhode Island combined (Santiago 2005). These golf courses represent a significant investment of public and private capital and land. Often, they are centerpieces of destination resorts and vacation areas and consequently have had impacts on vacation travel and retirement migration (R. L. A. Adams 1995).

Our objective in this article is to explore the changing geographical distribution of golf courses in the conterminous United States at the regional level using county data and to determine whether golf-course construction and distribution were influenced by some of the major socioeconomic driving forces of the twentieth century (Kates, Turner, and Clark 1990; Turner and Meyer 1994). In some ways, this study updates and expands on the work of Robert Adams and John Rooney (1985, 1995). We, however, focus more explicitly on golf courses as a significant land use that reflects the socioeconomic and environmental drivers of their construction epoch.

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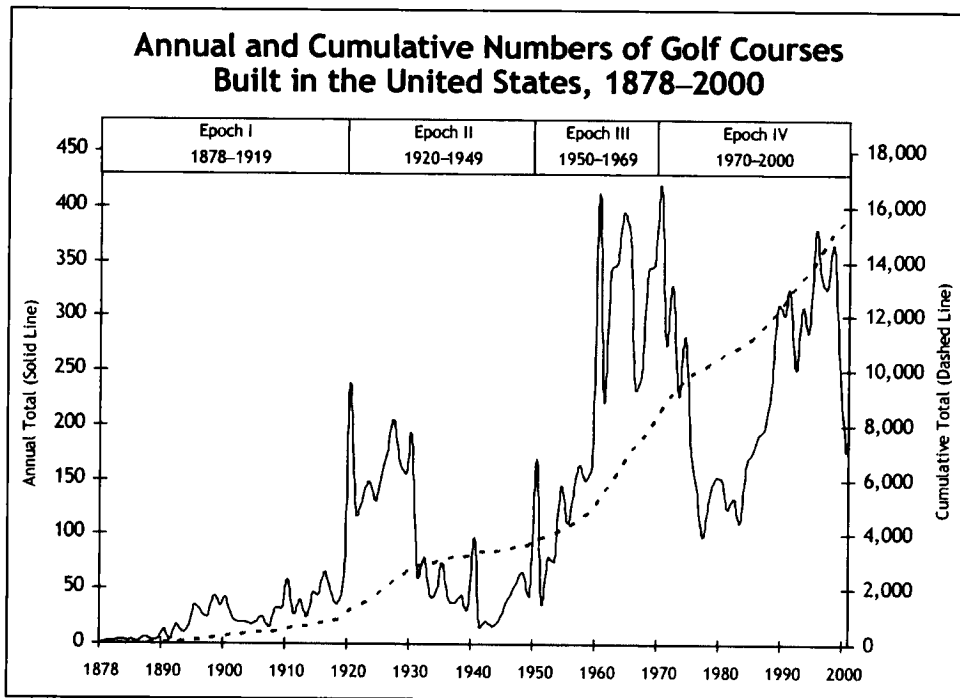


FIG. 1—Annual and cumulative numbers of golf courses built in the United States, 1878–2000. Source: *Golf Magazine* database.

Using a database we purchased from its creator, *Golf Magazine*, we divided dates of golf-course construction into four growth epochs that generally correspond to major socioeconomic conditions of the time: Epoch I, urban, elite beginnings (1878–1919); Epoch II, growth and stagnation during turbulent times (1920–1949); Epoch III, increased leisure time and affluence (1950–1969); and Epoch IV, maturation and saturation (1970–2000) (Figure 1). Some of these epochs roughly correspond with urban and economic periods that have been recognized by other geographers. The beginning of Epoch II, for example, corresponds with the beginning of John Borchert's auto-air-amenity epoch and John Adams's recreational auto era (Borchert 1967; J. S. Adams 1970). The similarities of our epochs compared with those of Borchert and Adams are not surprising, for each of them attempted to do exactly what we attempt to do—discern patterns in recent U.S. land-use changes. Understanding the drivers of golf-course construction will be crucial to understanding the geography of golf and golf courses.

#### EPOCH I, 1878–1919: URBAN, ELITE BEGINNINGS

Wealthy travelers brought golf from Scotland to the United States during the 1880s (Adams and Rooney 1985; Jackson 1985; Wyckoff 1990). In 1878, Saint Andrews, north of Yonkers, New York, became the first documented American golf club (Wind 1956;

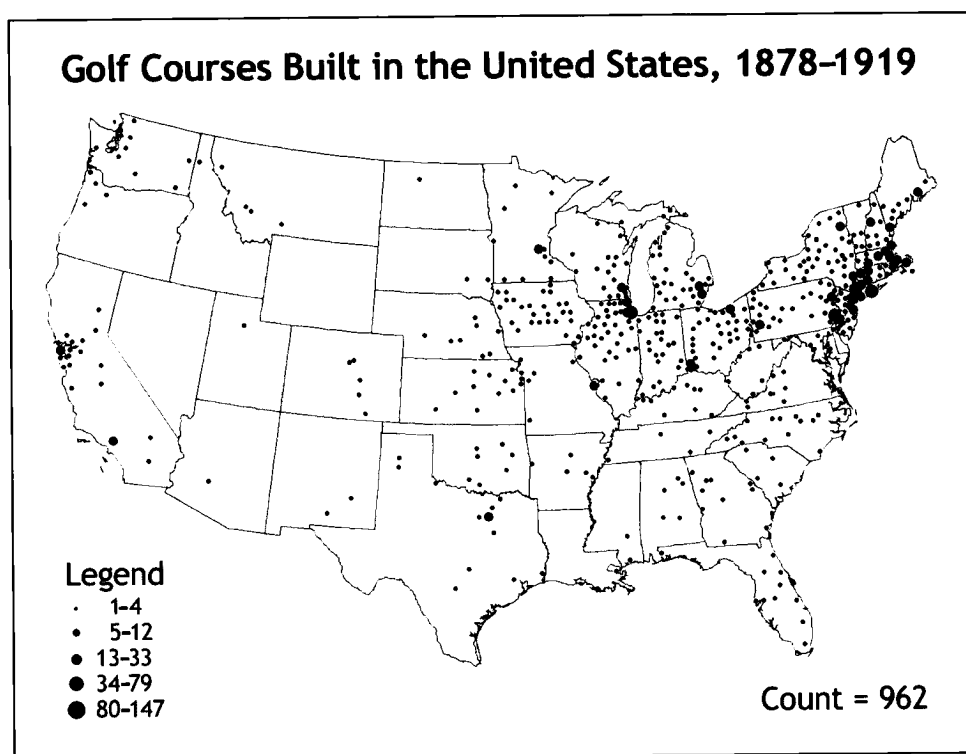


FIG. 2—Golf courses constructed in the United States during Epoch I. Source: *Golf Magazine* database.

Betts 1974). Golf began as a sport for the social elite, who had the first golf courses constructed in the suburbs of eastern, coastal population and financial centers (Adams and Rooney 1985) (Figure 2). These first golf courses were predominantly private, and private courses outnumbered public courses until the 1960s (Fishman 1987). Golf also quickly became part of the athletic programs of socially elite universities such as Harvard and Yale (Adams and Rooney 1985, 1995; Young 2002).

Scottish golf-course designers also came to the United States and replicated the course designs of their homelands (Bremer 1981; Adams and Rooney 1984). These courses were primitive, with minimal alterations to the existing landscape. The land used for the courses was minimized by golfers playing “around.” The golfers played the first nine holes, turned around and played nine more holes that were alongside the first nine. This layout minimized the land used for the golf course and took full advantage of the natural lay of the land (Cornish and Whitten 1981; Adams and Rooney 1984). These courses were typically constructed at urban fringes, served the single purpose of providing a sports playing field, and left little or no room for housing or commercial developments.

Between 1879 and 1919, country clubs constructed most of the nation’s 962 golf courses.<sup>1</sup> Regionally, golf emerged as a suburban sport because of its large land demands and also because it was adopted as a sport in the United States at a time

when the elite were moving to urban edges (Wyckoff 1990). The result was suburban subdivisions with country clubs that included golf (Jackson 1985; R. L. A. Adams 1995). Sometimes the wealthy incorporated their subdivisions into "golf-club" villages to minimize sharing their tax base with the middle class (Higley 1995). Nationally, most courses were concentrated in the urban Northeast, with the greatest concentration in and around New York City. Boston, Massachusetts, and Philadelphia, Pennsylvania, became centers of secondary clusters of golf courses. Other golf regions included Chicago, Illinois, San Francisco, California, Pittsburgh, Pennsylvania, Detroit, Michigan, and other major industrial and financial cities of the day.

A second pattern of golf courses focused on the amenity and second-home areas of the wealthy, which, in the days before air conditioning, were often located in coastal or mountainous areas (Wyckoff 1990; Aron 2005). These included the Bar Harbor–Mount Desert Island area of Maine, Cape Cod and Buzzards Bay in Massachusetts, Rhode Island Sound, Long Island and Long Island Sound, the Adirondack, Catskill, and White mountains of the Northeast, the east coast of Florida, and the west coast of Michigan. The Riverside County Club opened California's first golf course in 1891, and in 1897 the Del Monte, the oldest continually operating course west of the Mississippi, opened on California's Monterey Peninsula (Hotelling and Dost 1999). A third general region of golf paralleled the Erie Canal westward through the industrial heartland of the lower Great Lakes and the Midwest. To a large extent, the location of golf courses reflected the urban wealth and decision-making hierarchy of the late nineteenth and early twentieth centuries (Borchert 1967).

#### EPOCH II, 1920–1949:

##### GROWTH AND STAGNATION DURING TURBULENT TIMES

Golf-course construction reflected the exuberance and turbulence of society during the three decades following 1920. The Roaring Twenties are also known as the "Golden Age of Sport" (Rooney and Pillsbury 1992). Golf thrived during the economic boom of that decade, as did baseball, football, boxing, and horse racing (Dulles 1959), and professional golfers, such as Bobby Jones and Walter Hagen, became popular public figures (Betts 1974; Bremer 1981). The expansion of golf courses in the north-central United States was particularly impressive during the 1920s, and by 1931 the region accounted for more than 40 percent of the nation's golf courses (Adams and Rooney 1985). Golf remained a predominantly northeastern game, but during this period a shift to the U.S. interior began.

Golf remained a sport for the wealthy and was associated with country clubs and other private golf facilities (R. L. A. Adams 1995). Most of the nearly 2,700 new golf courses reinforced the spatial patterns of Epoch I. The core region of American golf included the northeastern seaboard, which expanded to include Baltimore, Maryland, along with upstate New York and the Great Lakes industrial cities (Figure 3). Golf also expanded geographically to many of the smaller cities and county seats of the Midwest and continued its growth in coastal recreation zones. The sport became popular in the southern Piedmont and most Fall Line counties during this

epoch. Westward expansion included the oil-patch towns in Texas, Oklahoma, and Kansas, the tri-state mining region of Missouri, Kansas, and Oklahoma, and the counties at the base of the Balcones Escarpment in central Texas. By 1950, golf had also become well established in Pacific Coast cities and many resort areas in the South (for example, the Augusta National Golf Club in Augusta, Georgia) and other regions (the Cypress Point Golf Club on California's Monterey Peninsula, for instance).

The construction of golf courses during this epoch reflected both national and international political and economic situations. Three-fifths of the 2,689 new golf-course constructions occurred during the economically vibrant 1920s. Many of these provided the centerpieces of new country clubs (R. L. A. Adams 1995). The number of courses constructed during the Great Depression years fell to 651 and dropped again during the World War II years to 419. These numbers suggest that World War II had a larger impact on golf-course construction than did the Great Depression, perhaps because the war economy and associated regulations governing national resources, such as gasoline and rubber, affected the wealthy players more than the Great Depression. Following the end of World War II the number of courses being built rebounded because of the massive number of servicemen who returned home.

Most new golf courses continued to follow the compact layout and land-saving design of the early courses, but, as the sport matured, golf-course designers began to experiment. The narrow strip of seashore dunes limited the size and layout of the original Scottish courses, but this limitation was not present in the United States. In 1932 the Augusta National Golf Club course opened an eighteen-hole course on a land parcel large enough to accommodate a typical twenty-seven-hole course. This course, which became the home of the Masters Tournament, had ample buffering between fairways with gardenlike, manicured areas (Adams and Rooney 1984).

### EPOCH III, 1950–1969:

#### INCREASED LEISURE TIME AND AFFLUENCE

Golf-course construction accelerated after World War II, a time of dramatic economic and population growth and fundamental restructuring of the nation's socioeconomic geography. Younger retirees with paid benefits and longer life expectancy were driving forces for increased recreation and amenity migration (Ullman 1954). Recreational land-use activities saw a wholesale increase during the postwar period (Butler 1998). The addition of 80 million children during the baby-boom years of 1946–1964 (Bouvier and De Vita 1991), coupled with the nation's growing love for and dependence on the automobile, resulted in the construction of vast suburban rings around the central cities and in decreased population density within metropolitan areas (Borchert 1972; Vance 1990). Golf's demand for land and its historic association with the financially successful fit well with the upwardly mobile, suburban families that were trying to leave behind the problems of economic depression and war.

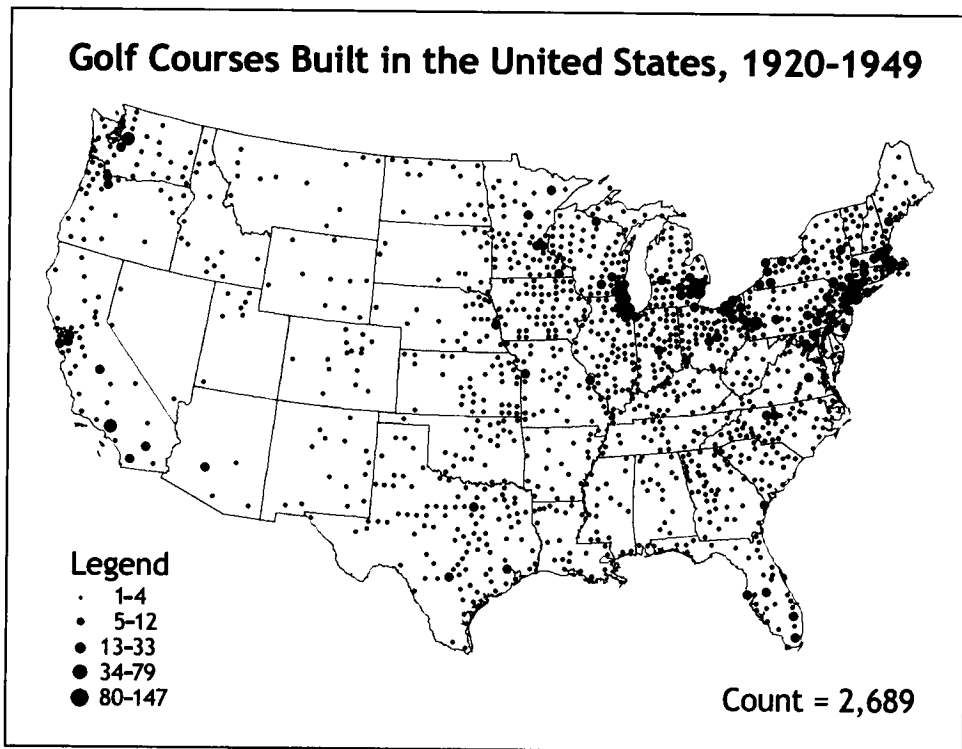


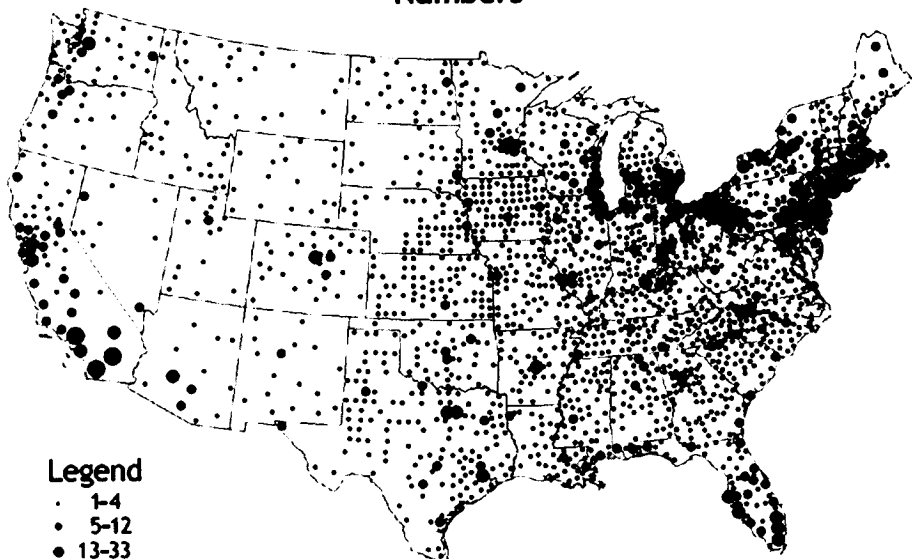
FIG. 3—Golf courses constructed in the United States during Epoch II. Golf courses in the Midwest and Great Plains appear to be regularly spaced because the dots are placed at the center of counties. Source: *Golf Magazine* database.

During this epoch, country clubs, towns, and developers constructed 5,558 new golf courses (see Figure 1). They concentrated in Megalopolis, along the upstate New York industrial corridor, and in the industrial heartland from Pittsburgh, Pennsylvania, to Milwaukee, Wisconsin (Figure 4, top). Secondary clusters were in the Piedmont, coastal Florida, and West Coast and midwestern cities. Palm Springs, California, emerged as a national golfing destination during this epoch. The growing popularity of golf stemmed from the robust economic growth that characterized these decades (Frederick and Sedjo 1991; Sedjo 1991). Newfound affluence initiated a golf-course boom in the Sun Belt, but because the majority of the population still lived in the northeastern and north-central parts of the country, those two regions continued to account for the majority of new courses being built.

Several other driving forces also stimulated interest in the sport. President Dwight Eisenhower was popular, and his avid participation in golf helped to legitimize it for all economic groups, especially the growing and increasingly affluent middle class (Adams and Rooney 1995). People watched the president play golf on television, which became a second driving force in the popularization of the game (Adams and Rooney 1995). Sports broadcasting became a new type of entertainment. Tele-

## Numbers and Location Quotients of Golf Courses Built in the United States, 1950-1969

### Numbers

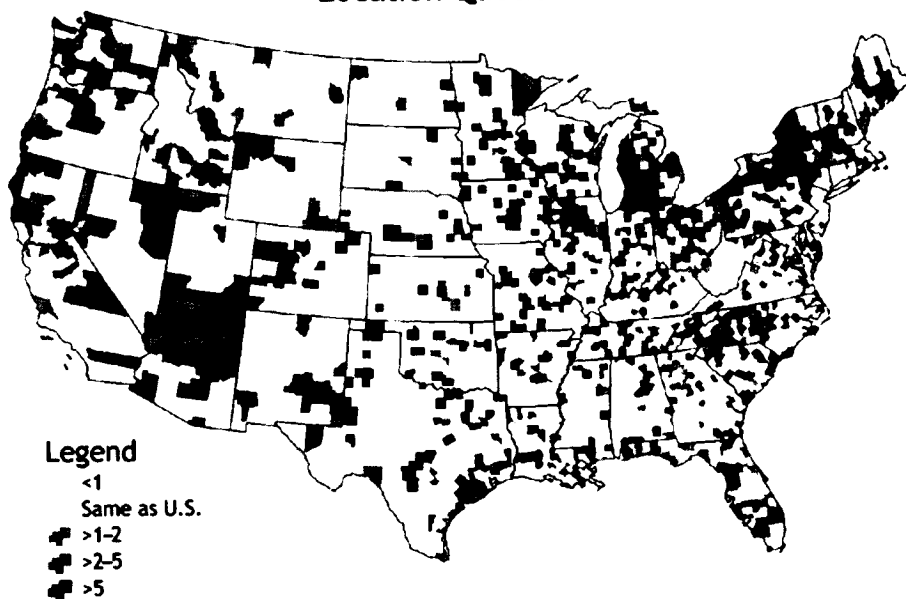


#### Legend

- 1-4
- 5-12
- 13-33
- 34-79
- 80-147

Count = 5,558

### Location Quotients



#### Legend

- <1
- Same as U.S.
- >1-2
- >2-5
- >5

FIG. 4—Numbers of (*top*) and location quotients for (*bottom*) golf courses constructed in the United States during Epoch III. Sources: *Golf Magazine* database; U.S. Census Bureau 2006a.



vision networks broadcast golf matches, and the best professional golfers, such as Sam Snead and Arnold Palmer, became celebrities. Americans also had more leisure time: Between 1965 and 2003 the number of hours that Americans worked for pay per week declined by an average of eight hours (Aguar and Hurst 2006). Toward the end of the epoch later marriages, fewer children per family, and earlier retirement all contributed to increased leisure time (Senauer, Asp, and Kinsey 1991). Golfers devoted some portion of their newly available hours to playing the game.

In order to compare the relative concentration of golf courses in each U.S. county with the national average we calculated statistics called "location quotients" (Johnston and others 2000) (Figure 4, bottom).<sup>2</sup> In the Northeast, coastal Maine, southern Vermont, western Pennsylvania, and most of New York, especially the Hudson Valley, were particularly active growth areas. Much of Michigan showed high golf-course construction rates, as did a strip of counties from Kankakee, Illinois, to Dubuque, Iowa. Golf became more popular in the Carolina Piedmont and in communities east of the Cascades and Sierra Nevada. The scattering of high-location-quotient counties throughout much of the nation appears to reflect multiple geographical processes. Many of these counties were near expanding metropolitan areas and may illustrate the diffusion of population and wealth to the suburbs and beyond.

Other scattered counties with high location quotients show the construction of golf courses at vacation resorts and retirement communities to meet the demands of visitors and residents and, increasingly, to attract new visitors and residents. Examples include the counties of coastal North and South Carolina, Florida, coastal Mississippi, the Ozarks, and the mountain valleys of Colorado, Montana, and the Yellowstone Plateau of Wyoming. Areas with particularly high construction rates also included resort areas and the traditional vacation and second-home areas along the shores of Lakes Michigan and Huron and the north woods of Minnesota, Wisconsin, and Michigan.

Another factor that played a part in the shift of golf courses from heavily populated areas to more rural areas was a program developed by the U.S. Department of Agriculture's Farmers Home Administration (FmHA). The National Golf Foundation predicted that the United States would be home to 10 million golfers by 1970 and that 10,000 courses would be needed to meet the demand (FmHA 1966, 39). Much of this demand was in rural communities with small populations where existing courses were not available or, if courses were available, they were accessible only to club members. The FmHA reported that "outdoor space in itself is a resource in this day of crowded city dwelling" (1966, 1). The report noted that, on a nationwide basis, the demand for golf courses far exceeded the supply. In response, the Department of Agriculture developed a program designed to make recreation opportunities accessible in rural areas, just as earlier programs had provided for rural free delivery of mail and supported the establishment of rural electric associations.

From 1963 through 1975 the FmHA offered two types of subsidized loans to assist rural communities that wanted to create or improve public recreation facilities,

which included golf courses and driving ranges. Their potential to stimulate economic activity as well as to serve family recreation needs justified these programs. During these years the FmHA distributed \$10.5 million in loans to rural communities for projects that included the construction of golf courses, swimming pools, tennis courts, and baseball facilities). Golf-related projects accounted for 566 of the 1,035 loans disbursed (Parker 2005).

#### EPOCH IV, 1970–2000:

##### MATURATION AND SATURATION

More than 7,000 golf courses opened between 1970 and the century's end (see Figure 1). The spatial pattern of golf-course construction became more complex during this epoch, because golf continued to diffuse down the urban and income hierarchies and because much of the nation underwent economic and population restructuring after 1970 (Pandit 1997) (Figure 5, top). Movement to amenity areas, which were typically warm and sunny, commenced during the nineteenth century (Lewis 2001), but during the 1970s the rate quickened (Pandit 1997). Americans were living longer, healthier lives, retiring younger, and had access to portable pensions and social security. Retirees often chose to move temporarily or permanently to areas that provided lifestyle amenities (Vance 1987; Gendell and Siegel 1992; Pandit 1997). Many of these retirees wanted to spend part of their time having fun outdoors, and golf provided them with that opportunity. The addition of golf courses in coastal North and South Carolina and Florida, for example, was largely the result of retiree migration and tourism (Mohl and Mormino 1996; Walker, Solecki, and Harwell 1997), with Florida having 894 of the 7,342 (12 percent) newly built golf courses during this epoch.

Another stream of visitors—"snowbirds"—and permanent retirees fueled growth in Arizona and Southern California (Craig 1992; Lang and Rengert 2001). Meanwhile, others discovered the amenities that were available in the Mid-South, Ozarks, Texas, and Colorado (Graff and Wiseman 1990; Stroud 1995), and yet others moved to the north woods of Minnesota, Wisconsin, and Michigan (Hart 1984b).

Beginning about 1970, American industry shifted to meet new types of demands and to cope with aging and obsolescent buildings and equipment that were often located in areas that were relatively inaccessible via the new interstate highways (Borchert 1987; Pandit 1997). Many business owners moved to the Sun Belt in search of inexpensive land, low wages, and greater accessibility to the national market (Moon 1987; Hartshorn 1997). As businesses left, midwestern and northeastern baby-boom graduates were often unable to find jobs at home and migrated to the Sun Belt to begin their careers (Pandit 1997). The resulting restructuring of the nation's economic and political geography accelerated the population and economic decentralization that had begun after World War II (Berry and Dahmann 1977; Vance 1990; Meinig 2004). Southeastern and southwestern states gained population and jobs, while the Northeast, the Midwest, and much of the rural South suffered relative decline.

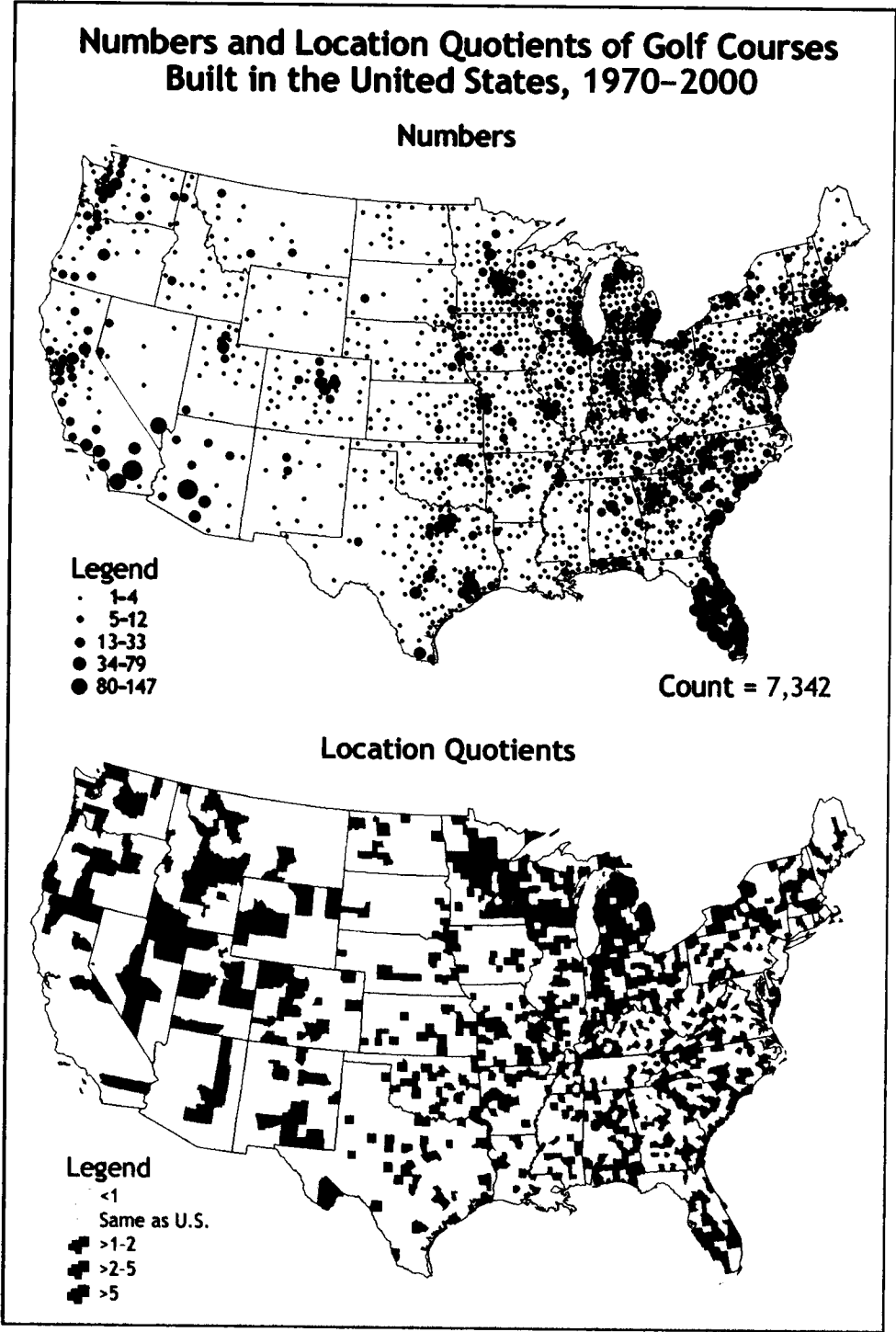


FIG. 5—Numbers of (*top*) and location quotients for (*bottom*) golf courses constructed in the United States during Epoch IV. Sources: *Golf Magazine* database; U.S. Census Bureau 2006a.

Golf courses were less likely to be constructed in declining regions than in stable or growing regions. The changes were particularly striking in Megalopolis and the Rust Belt region bounded by Pittsburgh, Pennsylvania, Buffalo, New York, and Toledo, Ohio, where steel and related industries closed or downsized. However, developers continued to construct golf courses throughout southern Michigan and along the western shore of Lake Michigan. The construction of golf courses accelerated in southern Ohio and central Indiana, perhaps in response to new, automobile-related industries (Rubenstein 1990, 1992). The core of Sun Belt economic growth in the eastern United States was the Carolina and Georgia Piedmont. Population growth in the Piedmont increased 82 percent after 1970, compared with national growth of 38 percent (U.S. Census Bureau 2006a). In the Piedmont, golfers had access to new courses throughout the densely populated region; most notable were the clusters surrounding Atlanta, Georgia, and Charlotte, North Carolina, and in the Winston-Salem–Raleigh–Durham, North Carolina urban crescent. In Texas, Dallas, Houston, and the cities at the base of the Balcones Escarpment acquired new golf courses.

Desert areas of the Southwest, with their mild winters and generally sunny days, became notable for their golf courses. Las Vegas, Nevada, the nation's fastest growing major metropolitan area during the 1990s, added golf to its list of reasons to visit or relocate, and some metropolitan areas in Arizona became noted for the number and quality of their golf courses (R. L. A. Adams 1995; Adams and Rooney 1995). New golf-course construction followed the expansion of Southern California population along the coast from San Diego to Santa Barbara, and the Palm Springs area continued to be one of the nation's premier golf destinations. Economic growth partially associated with Silicon Valley fueled the construction of new golf courses throughout the San Francisco–Lake Tahoe region, and in the Pacific Northwest golf became more popular in the Puget Sound lowland and the northern Willamette Valley. In the mountain interior, golf courses were concentrated at the base of the Colorado Front Range, as well as along the Wasatch Front.

We also mapped location quotients for this epoch (Figure 5, bottom). Many new courses were built in urban areas such as Houston, Texas, and coastal California and in amenity regions such as the New Jersey coast and Cape Cod, but because of their rapid population growth they disappeared from the map. The Upper Midwest states of Michigan, Wisconsin, and Minnesota constitute the largest area in which more golf courses were constructed than expected based on the region's population. The north-central lakes region of Minnesota had long been an area of seasonal homes (Borchert and Gustafson 1980). The demand for golf courses may have increased because many of the owners chose to retire in their seasonal home and because the rapid population growth of the Twin Cities resulted in increased demands for accessible outdoor recreation (Hart 1984a).

Golf remained a popular sport in the eastern Corn Belt, the Piedmont, and Florida and increased in popularity in northern and eastern Alabama. Parts of upstate New York, surprisingly, exceeded the national average from 1920 through 2000.

The Carolina coast, sometimes called the "Golf Coast," became one of the nation's premier golfing regions (Wilson 1989). The Landings, just outside Savannah, Georgia, is the largest private golf development in the nation, with six eighteen-hole courses surrounded by a large residential community. Golf grew rapidly in the Ozarks and the surrounding areas of southern Illinois, Missouri, and Oklahoma. Golf-course construction also exceeded the national average in counties throughout most of the mountainous West; many of these were associated with resort towns that used golf to anchor their summer season. Examples of these include Vail, Colorado, Sun Valley, Idaho, and Big Sky, Montana (Adams and Rooney 1995).

During the late 1970s and early 1980s a series of national and international events resulted in sharp decreases in the number of new golf courses. Inflation began when the United States ended its dollar-to-gold conversions and let the dollar float in the international currency market (Sternlieb and Hughes 1986). The United States also borrowed money to simultaneously fund the Vietnam War and the social programs of the Great Society, which contributed to inflation. Finally, in 1973, energy prices skyrocketed when the Organization of Petroleum Exporting Countries reduced oil supplies to the United States; later in the decade energy prices again spiked when Iran prohibited exports of oil to the United States. As the resulting double-digit inflation and high interest rates eroded savings and incomes, and energy-related expenses slowed the economy, individuals and businesses altered their spending and investment strategies. Americans became less interested in owning recreational properties (Stroud 1995), and developers were unwilling to risk investing borrowed money in golf courses.

#### RESIDENTIAL GOLF COMMUNITIES

One of the most significant consequences of golf-course development is the alteration of neighboring residential land values. Country-club golf courses and the development of affluent suburbs have commonly been intertwined (Bale 2003). More recently, real estate developers have used the attraction of close proximity to golf courses to develop and sell adjacent housing. About 12 percent of all golf courses in the United States today are in master-planned communities (Mulvihill and others 2001, 3). The goal of real estate developers is to achieve the highest returns from any particular parcel of land. Building residential developments around a golf course is an example of using the amenity value of the golf course to attract potential buyers and boost real estate prices. Property-valuation research has shown that golf is second only to water as an amenity that enhances land value. Many people who purchase homes in golf communities are not golfers but people who appreciate the aesthetic value of the course, the permanence of the open space, and the perceived exclusivity that the course and community offer (Mulvihill and others 2001).

The development of semiprivate, residential golf-course communities in the United States began in earnest during the 1950s and has steadily grown since then. During the 1980s almost 35 percent of new golf facilities included real estate de-

velopments, and by the century's end, more than 40 percent of all new and planned golf-course developments were tied to residential development (Mulvihill and others 2001, 3). In Phoenix, Arizona, for example, developers constructed most golf courses as part of master-planned communities or in conjunction with a resort (Mee 2001). The reason for doing this is that developers can receive an additional \$20,000 for each house that was located adjacent to or near a golf course and a lesser amount for houses slightly farther away (Grow and Palmer 2001). For a residential development of 1,500 houses on a golf course, developers can thus make more than \$30 million in profit by adding homes to the golf-course plan—far more than the \$8 million–\$10 million it costs to build the course and more than the revenue lost by using land for the golf course instead of selling it as house lots.

People who retired during the 1980s and 1990s often moved to planned communities in places such as Phoenix or Tucson, Arizona, or Palm Springs, California, many of which were built around a golf course as their centerpiece (Johnson and others 1995). The best-known early example is Sun City, Arizona (Graff and Wiseman 1990). Many early golf communities catered to the wealthy (Mulvihill and others 2001). Recently, some developers reduced the size and opulence of related facilities to attract a buyers with a broad range of income; however, a gap between courses for the wealthy and courses designed to serve the middle market is still visible.

#### MEAN CENTERS OF GOLF

The geographical pattern of golf-course development can be better understood by comparing its mean center of gravity to that of the U.S. population (U.S. Census Bureau 2006b) (Figure 6). The initial distribution of U.S. golf courses reflected the patterns of wealth and social status of late-nineteenth- and early-twentieth-century America (Rooney and Pillsbury 1992). During the first decades of the twentieth century golf rapidly diffused across the nation, and by 1940 it had achieved the same longitude as the population center. The center of golf, however, remained significantly farther north, probably reflecting the large number of courses in Megalopolis, upstate New York, and the southern Great Lakes. During the rest of the century, the convergence of the two centers of gravity slowed, and by the century's end they began to draw apart. Population moved westward more rapidly than did golf, and the center of gravity for golf courses moved south more rapidly. The regionalization of new golf courses in the Southeast reflects the tremendous growth of the Sun Belt and retirement in Florida. The West has accounted for a significant portion of the country's population growth, but western towns, cities, and developers are less inclined to construct golf courses. The paucity of water and developable land may be limiting factors.

The center-of-gravity approach can also be used to map subsets of the golf data. We compared the centers of gravity of public and private courses and further compared public courses that are not associated with residential developments with private golf courses that have residential developments. Figure 6 demonstrates that

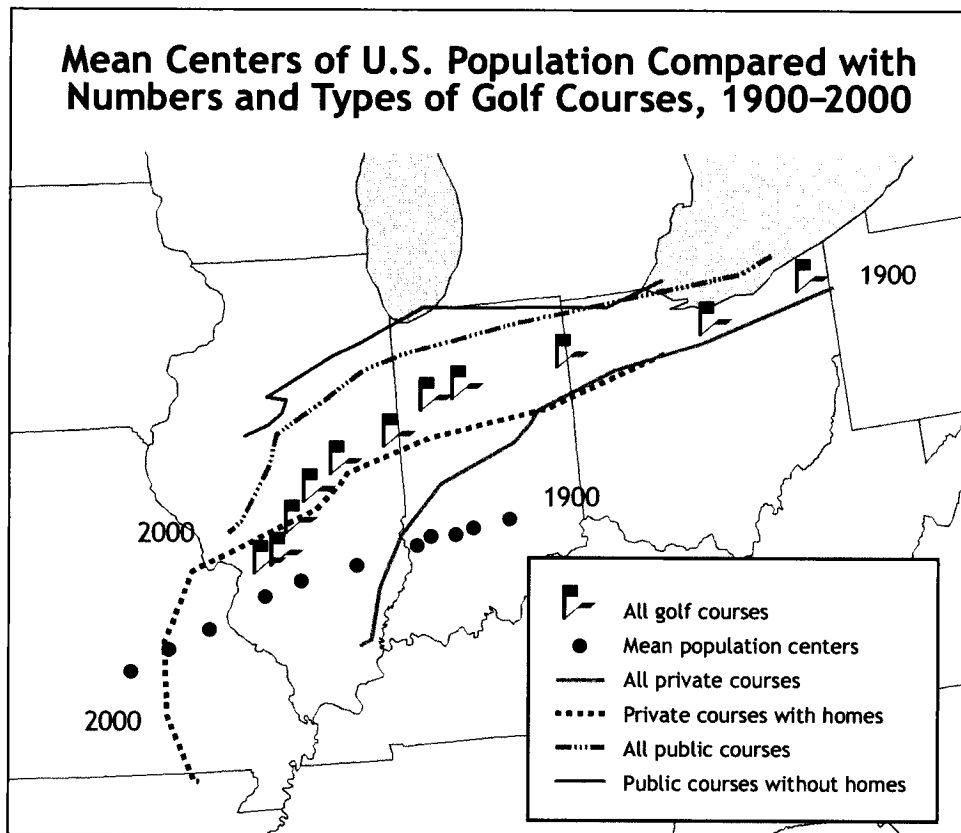


FIG. 6—Comparisons of mean centers of U.S. population with numbers and types of golf courses, 1900–2000. Sources: *Golf Magazine* database; U.S. Census Bureau 2006b.

collapsing the data to only one center point masks several spatial patterns. The various centers of gravity and their trajectories indicate that different types of golf appeal to, and may be accessible to, different groups of Americans.

Comparing the trend lines of public and private golf courses, public courses are more likely to be found in the older, historic golf regions of the Northeast and Upper Midwest. Historically, the trends followed the westerly and southerly movement of all courses; however, in more recent decades the distribution of private courses has corresponded more with the southeasterly influence of the newer private, residential golf communities being built predominantly in the southeastern Sun Belt in Florida, Georgia, and the Carolinas.

Dissecting the geography of private golf courses that have housing developments shows another dynamic pattern. The center of gravity of these courses moved west so fast that it almost overtook population. It then moved south and, more recently, southeasterly. The center of all private courses shows similar trends. The more typical nine-hole, public golf courses are more likely to be located in the Midwest, where they had been constructed during Epoch III in the years following World

War II when increased interest in golfing by the general public demanded that golf courses be built for middle-class Americans.

#### ACCESS TO GOLF AND THE ABUNDANCE OF AMERICAN LAND

Golf is a sport of the land. Although golf was not invented in the United States, its use of large land areas, its maturation along with television, and its move to high schools and resort and retirement areas makes it an all-American sport. Thirteen decades after golf arrived in the United States, most Americans had access to it. Today, municipal golf courses are common, and more than 14,000 high schools fielded teams in 2000 (U.S. Census Bureau 2006c). The sport can be played by both men and women and can be a lifelong activity.

The evolving spatial distribution of golf courses represents multiple driving forces that result in several regional patterns that reflect different socioeconomic and lifestyle groups. As a result of the various driving forces and growth and redistribution of the American population, the locations of golf courses have changed since the sport's introduction to the United States in the late nineteenth century. At that time, golf was primarily a sport for the wealthy, and the mostly private courses were relatively small and located in or near major eastern and midwestern metropolitan areas and in places where the wealthy sought cool summer breezes. As golf began to diffuse across the country and down the socioeconomic hierarchy, it encountered both good times and bad; from the declines of the Great Depression to the unrestrained post-World War II, suburban, and television-aided growth. First electric streetcars and later the automobile, along with high-speed roadways became driving forces for decentralization. The area of land accessible to development increased faster than the population did, while simultaneously increasing agricultural productivity reduced the demand for cropland. One result was that, in most suburban and rural areas, land became relatively less expensive (Borchert 1987; Fedkiw 1989). If land is inexpensive, people will use more of it (Brooks 1987); as the relative cost of land declined, the relative affordability of land for golf increased, which helped increase the sport's popularity. As golf became more affordable, it became more accessible to a wide range of income groups, and public golf courses became increasingly common. Meanwhile, golf-course designers embraced the abundance of land in the United States and began to construct larger courses with a greater emphasis on beauty and landscaping.

By the late 1900s golf showed signs of becoming a mature sport that was reaching the saturation level in terms of numbers of players (Grow and Palmer 2001). New players continue to be attracted to golf, but about the same number have left the sport (Mulvihill and others 2001). The future of golf may depend on the extent to which the baby-boom generation will have time and money available, as well as interest in, playing golf. An equally important geographical question is where this large generation will choose to retire. If significant numbers of baby boomers move to new locations when they retire and choose to play golf, demands for golf courses in these locations may increase even if the overall demand for courses does not



increase. Driving forces that will determine the numbers and locations of golf courses in the coming decades may include the relative value of land parcels, the costs of retirement property in retirement areas, and the ease and affordability of transportation.

#### NOTES

1. Of the original 16,611 courses in the *Golf Magazine* database, 1,066 had missing data that required us to omit them from the study. A *Golf Magazine* representative told us that the majority of those courses were built during the early years of golf and that data on the year in which they were built were not available (Lee 2001). The omission can be seen in Adams and Rooney's early estimates (1985): They stated that 982 golf facilities existed in 1900, whereas our data show only 300. Therefore, it is important to note that the cumulative totals shown in this article may not be correct, although the trends throughout the years remain relatively accurate. We are confident that the omitted courses did not influence our main points about major trends in the evolution of golf courses in the United States. The *Golf Magazine* data do not account for courses that have been closed; although closures do not happen with great frequency, they can occur.

2. Our location-quotient calculation for Epochs III and IV is:  $(\Delta \text{ county golf courses} / \Delta \text{ county population}) / (\Delta \text{ U.S. golf courses} / \Delta \text{ U.S. population})$ , where " $\Delta$ " equals "change in."

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